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Application No. 10/670,162
Reply to Office Action of October 4, 2006

REMARKS

Upon entry of the amendments, claims 1-15, 17-27, and 29 will be pending in the above-identified application. Claim 2 has been amended to clarify the subject matter regarded as the invention. New claim 29 has been added. Applicants submit that the amendment and the new claim are supported throughout the specification as originally filed, and therefore, no new matter is added by these amendments.

Rejections Under 35 U.S.C. §103

Claims 1-3, 9-15, and 17-23 are rejected under 35 U.S.C. §103(a) as being unpatentable over Chishti in view of Chen.

Applicants respectfully submit that the cited references, alone or in combination, fail to teach each and every element of the currently claimed invention, thereby precluding a *prima facie* case of obviousness under 35 U.S.C. § 103(a). See, e.g., MPEP §2143. In particular, the cited references at least fail to teach compressing a digital data set of meshes representing the teeth and displaying the compressed digital data set, as recited in claim 1.

As recited in claim 1, the present invention is directed to a computer-implemented method for generating a computer model of one or more teeth, comprising receiving as input a digital data set of meshes representing the teeth; creating inside and outside meshes by determining an intersection between a tooth mesh and a cutter mesh; compressing the digital data set; and displaying the compressed digital data set. As described in the current specification and recited, for example, in current claim 2, data compression according to the present invention can include creating a parametric representation of the digital data set. See, e.g., 0043-0051; FIG. 4; FIG. 5, FIG. 6. As can be understood with reference to the Figures and the originally filed specification for this case, the method of claim 1 provides numerous advantages including reduction in the amount of data storage space required for storing and communicating teeth treatment information, provides a more efficient and cost effective system, improved system responsiveness and functionality, and generation of realistic high-resolution models of a patient's teeth without requiring a user to possess in-depth knowledge of parameters associated with

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patient dental data compression. See, e.g., paragraphs 0010-0011. The computer-implemented method of claim 1 is not taught or suggested by the cited references, either alone or in combination.

Chishti teaches a system for repositioning teeth comprising a plurality of individual appliances, wherein the teachings of Chishti include computer remodeling, including producing digital data sets representing tooth arrangements. While Chishti represents a considerable advancement in the art, Chishti does not teach compressing the digital data set. Rather than teaching the compressing a digital data set of claim 1 and as described in the current specification, Chishti teaches that "[i]n order to reduce the computer time necessary to generate images, a parallel set of digital data set representing the IDDS at a lower resolution will be created." (see, col. 10, lines 51-53 of Chishti). As Applicants have previously pointed out (see Applicants response filed 7/14/06, pages 6-7), and as admitted by the Examiner in the present Office Action (see, e.g., pages 4 and 15), the lower resolution parallel digital data set of Chishti is not equivalent to compressing a digital data set - i.e., Chishti does not teach compressing the digital data set as recited in claim 1 and described throughout the specification of the present application.

Applicants respectfully disagree with the Examiners allegation the Chishti teaches displaying the compressed digital data set, as recited in claim 1. As admitted by the Examiner, Chishti does not teach compressing a digital data set (see above). Chishti cannot teach displaying what it does not teach creating in the first place - i.e., a compressed digital data set. Furthermore, the provision cited by the Examiner (col. 11, lines 58-col. 12, line 8; Fig. 4; Fig. 4A of Chishti) describes a virtual saw or eraser tool for removing unwanted and/or unnecessary sections of a digital model of teeth, and is therefore not relevant to data compression as described in the present application and recited in claim 1. Applicants submit that the rejection is deficient at least for this reason and should accordingly be withdrawn as the Examiner has failed to establish that this element of claim 1 is taught in the prior art.

Furthermore, while the Examiner admits that Chishti des not teach compressing a digital data set, it is alleged that Chen teaches data compression at paragraphs 0183 and 0186 of

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Chen, and that it would have been obvious for one of ordinary skill to combine these teachings of

Chen with those of Chishti to achieve the claimed invention. Applicants respectfully disagree.

Applicants point out, however, that Chen does not qualify as prior art under 35

U.S.C. §102 because Chen was filed after the earliest priority date of the present application. In

particular, the filing date of Chen is May 31, 2001. The Examiner's attention is respectfully

drawn to paragraph 0001 of the present application, which recites the following:

> This present application is a continuation of U.S. Application No.
> 10/241,240 (Attorney Docket No. 018563-004610US - AT-
> 00069.1), filed September 10, 2002, which was a continuation of
> U.S. Application No. 09/506,419 (Attorney Docket No. 18563-
> 004600 -AT-00069), filed February 17, 2000, the full disclosures
> of which are incorporated herein.

The corresponding domestic priority information for the present application is

also acknowledged in the Office correspondence and Filing Receipt mailed 3/25/2004. As such,

Chen is disqualified as prior art with respect to the present application.

Thus, for the reasons set forth above, Applicants respectfully submit that the

Examiner has not established that the each and every element of the claimed invention, as recited

in claim 1 are taught in the prior art. Dependent claims 2-3, 9-15, and 17-23 will be allowable at

least for depending from allowable independent claim 1.

Applicants additionally point out that claim 2 as amended, which depends from

claim 1, additionally recites "wherein the compressing the digital data set comprises creating a

parametric representation of the digital data set." The Examiner has not shown where the cited

art teaches or suggests data compression including creating a parametric representation of a

digital data set of the teeth as recited in claim 2. Instead, the Examiner again cites to Chishti at

col. 10, lines 51-53 of Chishti, which states "[i]n order to reduce the computer time necessary to

generate images, a parallel set of digital data set representing the IDDS at a lower resolution will

be created." As Applicants have already pointed out and admitted by the Examiner, Chishti does

not teach at the cited provision or elsewhere, compressing a digital data set, and certainly does

not teach compressing a digital data set comprising creating a parametric representation of the

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digital data set, as recited in claim 2. As such, Applicants that the rejection of claim 2 should be withdrawn for at least this reason.

Claim 9, which depends from claim 2, additionally recites "<u>wherein creating the parametric representation comprises generating a curve network</u>." Applicants submit that claim 9 is allowable for at least a similar rationale as discussed with respect to claim 2. In addition, the Examiner has not shown where the cited art teaches data compression comprising creating a parametric representation comprising generating a curve network, as recited in claim 9. Furthermore, the Examiner cites a provision Chishti (col. 11, lines 58-col. 12, line 8; Fig. 4; Fig. 4A) teaching a virtual saw or eraser tool for removing unwanted and/or unnecessary sections of a digital model of teeth, and, as noted above, the cited provision is not relevant to data compression as described in the present application and recited in claim 9.

The rejections of claim 10, 19, and 20 are traversed for at least a similar rationale as discussed with respect to claim 9. The Examiner has not shown where the cited art teaches the elements of claim 10, 19 or 20, but instead only cited to a provision of Chishti (col. 11, lines 58-col. 12, line 8; Fig. 4; Fig. 4A) that is not relevant to data compression as described in the present application and recited in claims 10, 19, or 20.

The rejection of claim 22 is traversed for at least a similar rationale as discussed above with respect to claim 2. The Examiner cites a provision of Chishti (col. 10, lines 51-56) that the Examiner has already admitted does not teach compressing a digital data set as described in the present application and recited in claims 2 and 22. As such, there appears to be no basis for the rejection of claim 22 and the rejection should be withdrawn at least for this reason.

Accordingly, for the reasons set forth above, Applicants submit that a prima facie case of obviousness has not been established and respectfully request that the rejections of claims 1-3, 9-15, and 17-23 under 35 U.S.C. 103(a) be withdrawn.

Claims 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chishti in view of Chen and further in view of Official Notice.

The combination of Chishti and Chen as applied to claim 1 is overcome for at least the reasons as set forth above. Chen does not constitute prior art under 35 U.S.C. §102 with

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respect to the present application. The Examiner's Official Notice does not provide the teachings that are missing from the Chishti reference. As such, claims 4-8 will be allowable at least for depending from allowable independent claim 1.

Accordingly, Applicants respectfully request that the rejections of claim 4-8 under 35 U.S.C. 103(a) be withdrawn.

Claims 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chishti in view of Chen, and further in view of Yamani.

Applicants initially point out that while the stated rejection is over the references of Chishti in view of Chen and further view of Yamani, the Office Action at page 13, first paragraph, recites the following:

> At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the teachings of _**Chen, Ohazama, and Bourke with those of Yamini**_, to view the anatomical object (in this case, teeth) from different angles. [Emphasis added]

Applicants believe that the current rejection is over the references of Chishti in view of Chen and further view of Yamani, and that the above noted citation of Ohazama and Bourke was an inadvertent error. However, clarification of the basis of the rejection with respect to this issue is respectfully requested.

Applicants additionally point out that in the present rejection the Examiner has cited to col. 10, lines 52-56 of Chishti at teaching the element of "compressing the digital data set", as recited in claim 24. Applicants believe that this is an inadvertent oversight, since Applicants have previously pointed out and the Examiner has admitted (see discussion above) that Chishti fails to teach data compression at the cited provision or elsewhere. However, clarification of the basis of the rejection is respectfully requested.

In order to be fully responsive to the rejection, however, Applicants respectfully submit that the cited references of Chishti, Chen, and Yamani, taken alone or in combination, fail to teach each and every element of the present invention as recited in claim 24, thereby precluding _prima facie_ obviousness. The combination of Chishti and Chen is overcome for at

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least a similar rationale as set forth above with respect to claim 1. Chishti does not teach compressing the digital data set, as recited in claim 24. Chen does not constitute prior art under 35 U.S.C. §102 with respect to the present application. Yamani fails to provide the teachings that are missing from Chishti. Thus, even if one of ordinary skill in the art were to combine the references of Chishti and Yamani (even though there appears to be no motivation or suggestion to do so), the combination would still fail to teach or suggest each and every element of the invention as recited in claim 24. Claims 25 and 26 will be allowable at least for depending from allowable independent claim 24.

Accordingly, withdrawal of the rejections of claims 24-26 under 35 U.S.C. 103(a) is respectfully requested.

Claim 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chishti in view of Chen and further in view of Yamani and further in view of Official Notice.

The combination of Chishti, Chen, and Yamani as applied to claim 24 is overcome for at least the reasons set forth above. Chishti does not teach compressing the digital data set, as recited in claim 24. Chen does not constitute prior art under 35 U.S.C. §102 with respect to the present application. Yamani fails to provide the teachings that are missing from Chishti. Thus, even if one of ordinary skill in the art were to combine the references of Chishti and Yamani (even though there appears to be no motivation or suggestion to do so), the combination would still fail to teach or suggest each and every element of the invention as recited in claim 24. Claim 27 will be allowable at least for depending from allowable independent claim 24.

Accordingly, withdrawal of the rejection of claims 27 under 35 U.S.C. 103(a) is respectfully requested.

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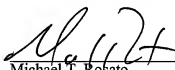
CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 206-467-9600.

Respectfully submitted,

Dated: 1/4/2007

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